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## Assessing access to obstetrical care via telehealth in the era of COVID-19

**OBJECTIVE:** The declaration of the novel COVID-19 pandemic by the World Health Organization on March 11, 2020, served as an impetus for change in healthcare delivery through the integration of telehealth platforms into obstetrical care.<sup>1,2</sup> The rapid expansion of telehealth thus created a natural experiment to evaluate the effect of telehealth in improving access to obstetrical care. Inadequate access to prenatal care is associated with perinatal morbidity and mortality.<sup>3–5</sup> The objectives of our study were to define vulnerable obstetrical populations that were more likely to miss scheduled visits, also known as no-shows, before the COVID-19 pandemic and to quantify the impact of telehealth on the odds of no-shows in vulnerable obstetrical populations. We hypothesized that telehealth would improve obstetrical care access, evidenced by a decline in the odds of no-shows in vulnerable populations.

**STUDY DESIGN:** We performed a retrospective review of 72,724 prenatal and postpartum visits at the Vanderbilt University Medical Center from December 1, 2019, to March 1, 2021, corresponding to the pre-COVID-19 period (December 1, 2019–March 14, 2020) and mid-COVID-19 period (March 15, 2020–March 1, 2021). Nonobstetrical and obstetrical-related visits (ultrasound, antenatal testing, phlebotomy) were excluded because these could not be conducted via telehealth. We used standard language queries to extract demographic data from Vanderbilt's electronic health record system. Vulnerable populations were defined based on demographic characteristics associated with a missed obstetrical visit pre-COVID-19. The proportion of individuals who had an active My Health at Vanderbilt account in the patient portal at the time of the scheduled appointments ranged from 88% to 92% and was comparable across racial groups. Logistic regression models were used to evaluate the differences among demographic groups, time periods, telehealth, and in-person visits. Odds ratios, confidence intervals, and *P* values were used to evaluate the effect of telehealth during the pandemic. *P* values <.05 were considered statistically significant. Our study was approved by Vanderbilt's institutional review board (number, 201300).

**RESULTS:** During the pre-COVID-19 period, the demographic factors associated with an increase in the no-show rate constituted the vulnerable populations shown in the Table. Black people, publicly insured patients, and those with less than a high school diploma were 2 to 4 times more likely to miss scheduled in-person visits than White people, privately insured patients, and those with a college education. During the mid-COVID-19 period, the overall

odds of missing in-person visits were increased when compared with the pre-COVID-19 period (odds ratio, 1.17; 95% confidence interval, 1.07–1.29). However, during the mid-COVID-19 period, the no-show rate was comparable between in-person and telehealth consultations for both antepartum and postpartum care and for vulnerable populations.

**CONCLUSION:** Although the integration of telehealth did not mitigate the disparities in accessing obstetrical care when compared with in-person visits, it did not widen the disparity in access among our most vulnerable populations, a feared consequence of telehealth's rapid and broad delivery. Future studies are necessary to determine the root causes of missed visits among vulnerable populations, including perceptions of bias and other social determinants of health. In addition, future investigations that compare telehealth and in-person care with perinatal outcomes would yield insight into whether telehealth can be considered a noninferior alternative to in-person care. ■

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TABLE

The distribution of completed and noncompleted visits by demographic characteristics stratified by period and encounter type

Period	Pre—COVID-19		Mid—COVID-19 vs pre—COVID-19	Mid—COVID-19				Telehealth vs in-person
Encounter type	In-person		In-person	In-person		Telehealth		
	Completed	No-show	No-show	Completed	No-show	Completed	No-show	
Characteristics	(n = 18,793)	(n = 1211)	aOR (95% CI)	(n = 47,160)	(n = 3234)	(n = 2192)	(n = 134)	No-show aOR (95% CI)
Visit type								
Antenatal visit (Ref)	17,221 (95)	902 (5) <sup>a</sup>	1.49 (1.31—1.71)	43,330 (95)	2426 (5) <sup>a</sup>	1161 (96)	52 (4) <sup>a</sup>	0.80 (0.57—1.12)
Postpartum visit	1572 (84)	309 (16)	1.41 (1.05—1.88)	3830 (83)	808 (17)	181 (85)	32 (15)	0.84 (0.57—1.23)
Insurance								
Private (Ref)	9466 (97)	263 (3) <sup>a</sup>	1.24 (0.98—1.57)	23,332 (97)	654 (3) <sup>a</sup>	1376 (97)	47 (3) <sup>a</sup>	1.22 (0.89—1.68)
Governmental	8998 (91)	873 (9)	1.39 (1.21—1.61) <sup>a</sup>	21,965 (90)	2413 (10)	741 (90)	79 (10)	0.97 (0.74—1.28)
Race								
Black (Ref)	2574 (89)	334 (11) <sup>a</sup>	1.22 (0.95—1.57)	6338 (88)	848 (12) <sup>a</sup>	260 (89)	31 (11) <sup>a</sup>	0.89 (0.56—1.42)
White	11,898 (95)	576 (5)	1.45 (1.22—1.72)	29,050 (95)	1546 (5)	1600 (95)	83 (5)	0.97 (0.76—1.25)
Asian	776 (96)	33 (4)	2.64 (1.44—4.85)	1702 (96)	80 (4)	75 (94)	5 (6)	1.42 (0.58—3.49)
Native American or Alaskan or Pacific Islander	80 (94)	5 (6)	0.56 (0.07—4.48)	205 (93)	15 (7)	7 (88)	1 (12)	1.95 (0.23—16.37)
Other	1578 (92)	136 (8)	1.47 (1.02—2.12)	3798 (91)	368 (9)	80 (94)	5 (6)	0.65 (0.26—1.57)
Ethnicity								
Hispanic (Ref)	2425 (92)	210 (8)	1.69 (1.29—2.20)	6197 (91)	631 (9) <sup>a</sup>	189 (94)	13 (6)	0.68 (0.37—1.23)
Non-Hispanic	14,271 (94)	884 (6)	1.33 (1.15—1.54)	34,480 (94)	2187 (6)	1822 (94)	108 (6)	0.93 (0.74—1.17)
Education								
Less than HS (Ref)	961 (86)	150 (14) <sup>a</sup>	1.86 (1.28—2.69)	2253 (85)	401 (15) <sup>a</sup>	65 (89)	8 (11) <sup>a</sup>	0.69 (0.33—1.46)
Completed HS	2225 (91)	222 (9)	1.30 (0.94—1.78)	4778 (90)	535 (10)	196 (89)	25 (11)	1.14 (0.65—2.00)
Some college	1452 (94)	90 (6)	1.70 (1.12—2.59)	3152 (91)	308 (9)	211 (92)	19 (8)	0.92 (0.49—1.73)
Completed college	2269 (97)	75 (3)	1.75 (1.13—2.71)	5351 (96)	196 (4)	472 (97)	13 (3)	0.75 (0.43—1.33)
Advanced degree	1000 (99)	14 (1)	2.59 (1.11—6.04)	2037 (98)	42 (2)	231 (99)	3 (1)	0.63 (0.20—1.97)
Other	390 (92)	34 (8)	1.10 (0.46—2.66)	623 (90)	66 (10)	37 (95)	2 (5)	0.51 (0.12—2.24)

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(continued)

TABLE

The distribution of completed and noncompleted visits by demographic characteristics stratified by period and encounter type (continued)

Encounter type	Pre—COVID-19		Mid—COVID-19 vs pre—COVID-19	Mid—COVID-19		Telehealth		Telehealth vs in-person
	In-person		In-person	In-person		Completed		No-show
	Completed (n = 18,793)	No-show (n = 1211)	No-show aOR (95% CI)	Completed (n = 47,160)	No-show (n = 3234)	Completed (n = 2192)	No-show (n = 134)	aOR (95% CI)
Characteristics								
Language								
English (Ref)	15,840 (94)	929 (6)	1.31 (1.14–1.50)	40,192 (94)	2499 (6) <sup>a</sup>	2116 (94)	126 (6)	0.96 (0.78–1.18)
Non-English	2945 (91)	280 (9)	1.48 (1.15–1.91)	6904 (90)	735 (10)	74 (90)	8 (10)	1.02 (0.48–2.13)

Data are expressed as number (percentage), unless indicated otherwise.

A multivariate analysis of the baseline demographic characteristics of completed and noncompleted (no-show) appointments during the pre—COVID-19 period is shown in columns 1 and 2. The demographic characteristics during the pre—COVID-19 period associated with no-shows were compared with the reference groups. In columns 3 to 5, the no-show rate between the pre—COVID-19 and mid—COVID-19 periods are compared for in-person visits. In columns 6 to 8, the odds for no-shows are compared between telehealth and in-person visits during the mid—COVID-19 period.

aOR, adjusted odds ratio; CI, confidence interval; HS, high school; Ref, reference.

<sup>a</sup> P value of <.01.

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